

Trade-Offs in Allocating Allowances for CO₂ Emissions

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Background

- **Several cap-and-trade programs for CO₂ being considered. Each would:**
 - Establish cap on emissions
 - Distribute rights to emit (allowances)
 - Allow trading of those rights
- **Approach used successfully in U.S. to reduce the cost of reducing:**
 - Lead in gasoline
 - Emissions of SO₂ from utilities.

Potential Effects of CO₂ Cap-and-Trade Program

- **Reduce environmental and economic damages in the future**
- **Impose costs on the economy in the near-term**
 - Direct costs from reducing use of fossil fuels, particularly coal
 - Indirect costs due to interactions with tax system
- **Transfer income from bearers of allowance cost to recipients of allowance value**
 - \$50 to \$300 billion of transfers in 2020 (in 2007\$) for proposed legislation
 - Market forces would determine who bears the allowance cost
 - Policymakers would determine who receives the allowance value

Study Objectives

- **Examine evidence from existing studies about how allocation decisions could affect**
 - Overall cost to the economy
 - Distribution of policy gains and losses
 - Net effect of direct costs and allowance allocation on households in different income brackets
- **Estimate outcomes for 6 illustrative allocation scenarios**
 - Selling allowances versus giving them away
 - Using government share of allowance value in one of three different ways

General Conclusions

- **Distribution of initial direct costs and allowance costs are independent of allocation decision**
 - Some current shareholders and workers will face losses
 - Consumers will face higher prices for energy-related goods
 - There will be pressure on the federal budget
- **Ultimate distributional effects (i.e., initial costs + share of allowance value) are a policy choice**
 - Can use the allowance value to offset some, but not all, of initial costs
- **Policymakers' decisions about how to use the allowance value will substantially affect overall cost to economy**
 - Can vary by a factor of 2 or more
- **Policymakers face equity-efficiency trade-offs**
- **Giving away allowances scores low from both equity and efficiency perspectives**

Evidence on Incidence of Initial Cost

- **Consumers would bear most of the cost**
 - Prices would be higher for energy-related goods
 - Incidence would not be affected by point of regulation
 - Price increases would not be lessened if producers got allowances at zero cost
 - Opportunity cost of holding allowance
- **Some current shareholders could see declines in stock values**
 - Most significant for coal
 - Widely dispersed — relatively small losses for a large number of households
- **Some current workers could suffer job losses**
 - Most significant for coal
 - Concentrated — relatively large losses for a small number of households
- **Pressure would be put on federal budget**
 - Higher costs
 - Decreased tax collections due to decline in GDP

Consumer Price Increases are Regressive

Illustrative Example Showing Increase in Average Household Costs from a 15 Percent Decrease in Carbon Emissions

	Average for Income Quintile				
	Lowest	Second	Middle	Fourth	Highest
Cost Increase in 2000 Dollars	560	730	960	1,240	1,800
Cost Increase as a Percentage of Income	3.3	2.9	2.8	2.7	1.7

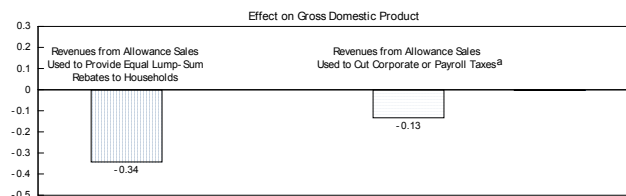
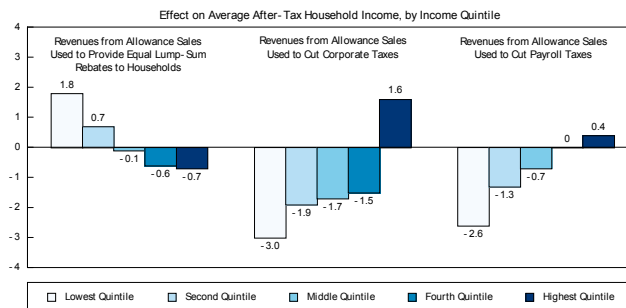
Evidence on How Allocation Affects Economy-Wide Costs

- **Selling allowances would raise substantial revenue**
- **Economy-wide cost would be minimized if revenue was used to reduce taxes that discourage productivity. Research suggests that such a strategy could:**
 - Cut cost of 23% reduction in emissions in half
 - Cut cost of 10% reduction in emissions by a factor of 3
- **Why such a big effect?**
 - Cap actually worsens distortions of existing taxes
 - Because distortions are already large, worsening them creates large losses
 - Using allowances value to reduce taxes minimizes that effect
- **Using the allowance value to reduce taxes would compete with other objectives, for example:**
 - Compensating low-income households, dislocated workers, or shareholders
 - Funding R&D for new technologies

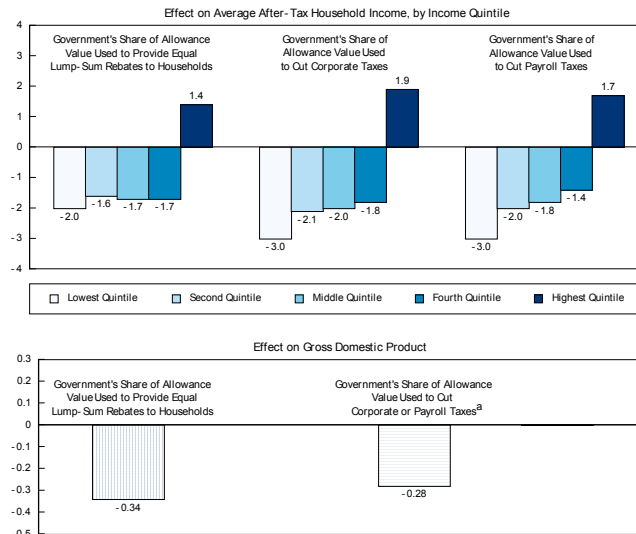
Putting it All Together: Examining the Distributional and Efficiency Consequences of Alternative Scenarios

- **Two allowance allocation strategies**
 - Free distribution
 - Historic precedent — cap-and-trade for SO₂ in US., CO₂ in EU
 - Government captures some of allowance value through taxes on company profits
 - Auction
 - Historic precedent — rights to electromagnetic spectrum
 - Government captures all of the allowance value
- **Three illustrative revenue recycling strategies**
 - Decrease corporate taxes
 - Decrease payroll taxes
 - Provide lump-sum rebate
- **Six different strategies**
 - Wide range of distributional effects
 - Equity-efficiency trade-off

Effects on Household Income and GDP from a 15 Percent Cut in CO₂ Emissions in 2010, with Allowances Sold and the Revenues Used in Alternative Ways



Effects on Household Income and GDP from a 15 Percent Cut in CO₂ Emissions in 2010, with Allowances Given Away and the Government's Share of Their Value Used in Alternative Ways



Conclusions

- **Policy design has big implications for both overall cost to economy and distributional effects**
- **Bulk of costs fall on consumers, disproportionately burdening low-income households**
- **Cap would aggravate distortions from existing taxes**
- **Auctioning the allowances would raise substantial revenue which could be used to reduce:**
 - Burdens on low-income in households or dislocated workers
 - Economy-wide cost of cap
- **Trade-offs necessary. E.g., using the allowance revenue to:**
 - Provide lump-sum rebates offsets regressivity, but does not reduce economy-wide costs
 - Reduce existing taxes lowers economy-wide costs, but doesn't offset regressivity of price increases
- **Free distribution scores are low according to both efficiency and equity criteria**

Where Can You Find More Information?

- **The following CBO studies are available under special collections for climate on CBO's web site at:**

www.cbo.gov/publications/collections/climatechange.cfm

- *Trade-offs in Allocating Allowances for CO₂ Emissions*
(April 2007)
- *Shifting the Cost Burden of a Carbon Cap-and-Trade Program*
(July 2003)
- *An Evaluation of Cap-and-Trade Programs for Reducing Carbon Emissions* (June 2001)
- *Who Gains and Who Pays Under Carbon Allowance Trading? The Distributional Effects of Alternative Policy Designs*
(June 2000)